

SHELTERBELT

VARIETIES FOR ALBERTA

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Prepared by:
Brendan Casement, Richard Escott,
Lamoine Maryniak and Gloria Hooke
Alberta Tree Nursery and Horticulture Centre
Alberta Agriculture
R.R. #6, Edmonton, Alberta, T5B 4K3
Phone: 422-1789

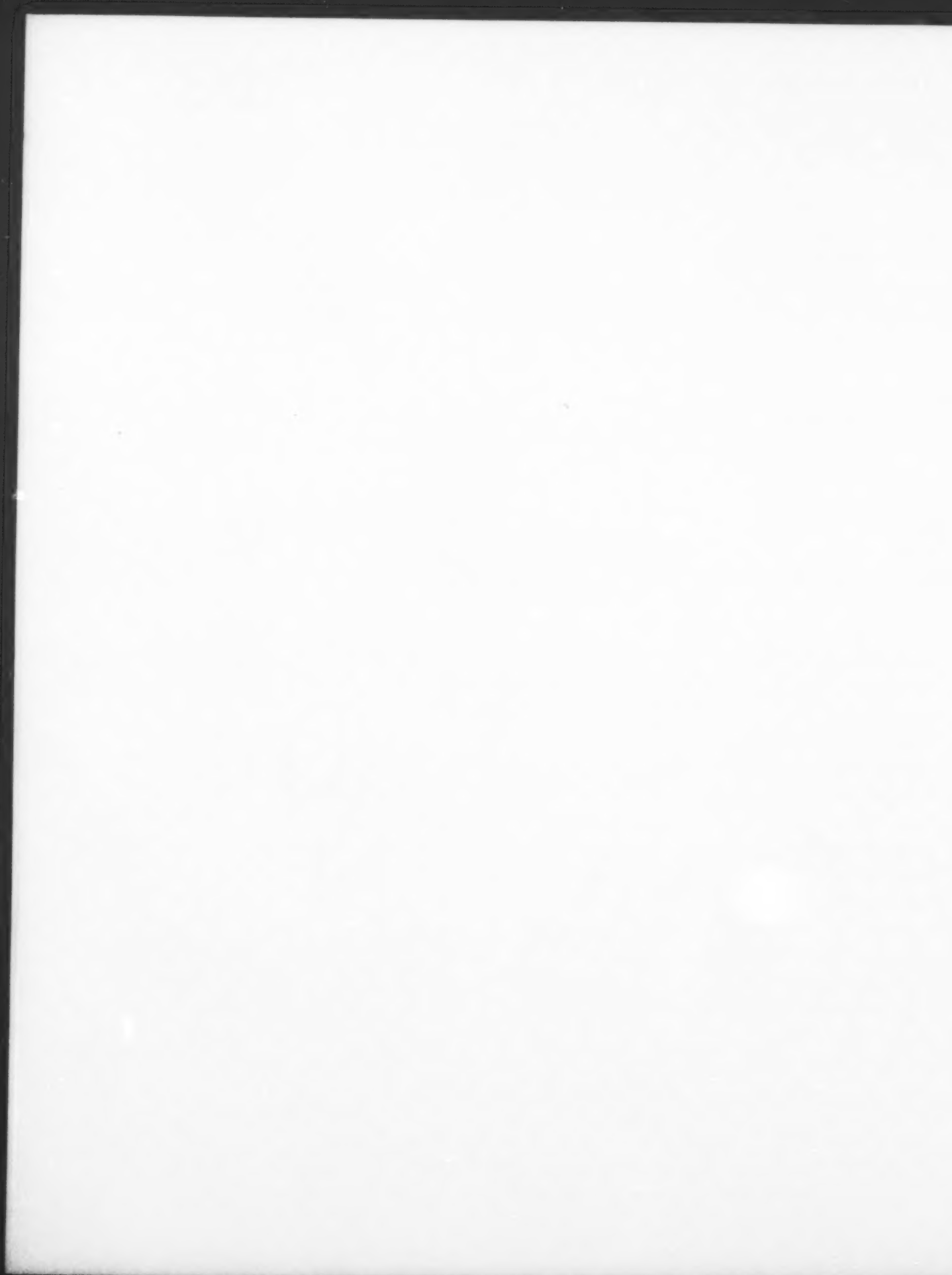
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Trees and shrubs have been available in Alberta for shelterbelts since about 1905, and from the present Alberta Tree Nursery and Horticulture Centre since 1952. The types of plants available have changed somewhat over the years in an attempt to provide the best possible plants for the protection of soil, crops and buildings from the wind and to provide for a better growing environment for crops and living conditions for humans and animals.

The recommendations in this publication are based on a survey undertaken during the summer of 1991. Only those plants that are available through the Alberta Shelterbelt Program have been included in this publication.

The **Species Suitability Maps** are to be used as a general guide only. Moisture and climate conditions, as well as insect and disease levels may vary within a given area.

Field Shelterbelt Varieties

For many years, field shelterbelts have been planted for soil conservation, crop protection, snow trapping, wildlife habitat and beautification of the prairie landscape.

Since the announcement of the Canada-Alberta Soil Conservation Initiative (CASI) in 1989, field shelterbelts have become an integral portion of the conservation plans of many farmers, producer groups, Agricultural Service Boards, and also the Provincial and Federal Governments. The encouragement of the use of field shelterbelts will continue through financial and technical support for trials and demonstrations. The capacity of the Alberta Tree Nursery and Horticulture Centre to produce and supply the numbers of trees requested by Alberta farmers will also be supported.

Recommendations are divided into two categories:

- Recommended Area (as indicated on map with triangles)
 - species are best suited for planting in this area.
- Satisfactory Area (as indicated on map with lines)
 - species are less suited for planting in these areas due to one or more of the following:
 - moisture or climatic limitations
 - winter dieback
 - insect pests
 - additional care and management required
- Unsatisfactory Area (indicated on map as white area)
 - species will perform poorly in these areas

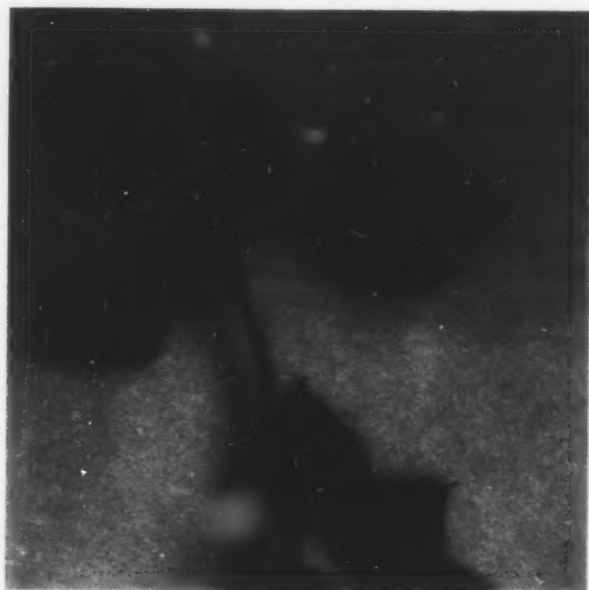
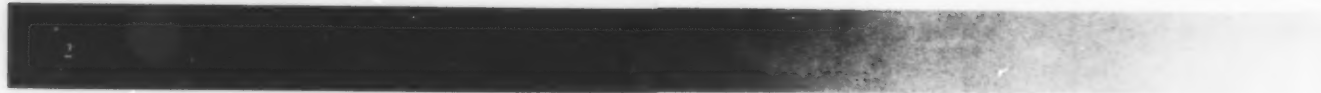
The recommendations are based on the plants being planted on non-irrigated sites with proper care and management practices being strictly followed.

Exceptions to the recommendations may apply if:

- irrigation water is available for tree use or planting site is a low lying area (higher soil moisture levels).
- planting site is a well protected area (excellent microclimate) and exceptional care and management practices are followed.
- planting site is in a "transitional zone" (small area between the boundaries of two different recommendations).

The six species recommended for field shelterbelts in Alberta are **green ash, Northwest poplar, acute leaf willow, white spruce, caragana and dogwood**. These species are available to farmers at no charge, for planting in field shelterbelts.

Other species suitable for field shelterbelts include **Siberian larch, Villosa lilac and lodgepole pine**.



Scientific Name:

Populus x jackii 'Northwest'.

Other Family Members:

Brooks Poplar (similar).

Plant Characteristics:

This poplar is considered a natural hybrid between the plains cottonwood and balsam poplar (*Populus deltoides* x *Populus balsamifera*). The tree was introduced as a male clone by the Northwest Nursery, Valley City, North Dakota.

It is a tall deciduous, usually single stemmed tree with a round to upright crown. It is fast-growing with a possible mature height of 25 m (80 ft), but usually 15 to 18 m (50 to 60 ft), with a spread of about 15 to 20 m (50 to 65 ft). It can be expected to reach a height of 6 m (20 ft) in five to seven years from a one year old rooted cutting. It is fast-growing, but is also short-lived, approximately 15 to 30 years. It is distinguished by strong wide-angled branches with large leaves at the ends. Leaves appear in late spring and drop relatively early.

Bark - Young bark is very smooth, greyish-green in colour, with striped lenticels. Older bark stays smooth and does not have the heavy grooves of the older black poplar and cottonwood.

Buds - Buds elongated, three times longer than wide, acute, outcurved, gummy, pubescent. There are eye-lash like hairs at the base of the bud. Leaf scar is triangular and large.

Leaves - Leaves alternate, simple, shiny green, broadly ovate with sinuated edge. Base is flattened or rounded. Blade is nearly as wide as long (to 10 cm or 4 in.); with hairs, midrib sparingly pubescent on both surfaces. Petiole reddish, cross-section oval, 0 to 2 terminal glands present.

Propagated by cuttings.

Fall Colour:

Leaves - golden yellow.

Site Preference:

Wide soil adaptation. Requires generous amounts of water, but can survive drought conditions. Can be planted in full sun or half shade.

Hardiness:

Alberta. Tolerates early and late frosts.

Uses:

For farmstead windbreaks, poplars should be planted in combination with a conifer. Leave 5 to 8 m (17 to 26 ft) between the rows and 2 to 4 m (6 to 13 ft) between the trees. In shelterbelt situations it should be planted 2 to 4 m (6 to 13 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

It is also planted as a shade tree, accent planting, background, street tree, parks planting and shelterbelts. Too large for a normal city lot, but good for large properties and parks. It is one of the two most desirable large male hybrid poplars in Alberta, the other one being Brooks #6.

Problems:

Extensive root system spreads four times the height of the tree and may cause damage to pavement, concrete, sewer lines, heave up sidewalks, and crack basement walls. Roots will sucker if damaged.

Diseases:

Canker - usually associated with a major setback, eg. heavy pruning, transplanting, root disturbance, old age, and drought.

Insects:

Forest tent caterpillars. Gall mites (in Southern Alberta) disfigure the tree and reduce vigour, making it more susceptible to canker.

Pruning:

Light spring pruning is preferred to remove dead, diseased or damaged branches. Old wood is somewhat brittle and the tree requires expert maintenance in old age. Usually allowed to develop multistems in shelterbelts.



-  RECOMMENDED
-  SATISFACTORY
-  UNSATISFACTORY



Scientific Name:

Populus x 'Brooks #6'.

Other Family Members:

Northwest Poplar (similar).

Plant Characteristics:

This poplar is presumed to be a cross between a native cottonwood and a Russian poplar (*Populus sargentii x Populus x petrowskyana*). It is a male clone introduced by Mr. A. Griffin, superintendent of the C.P.R.'s Engineering Division at Brooks, Alberta in 1954.

This poplar is a tall, fast-growing, upright, deciduous tree with rough bark. It carries its leaves fairly late in the year. Its mature height ranges from 10 to 25 m (33 to 80 ft) with a spread of about 15 m (50 ft). It can be expected to reach a height of 6 m (20 ft) in five to seven years from a one year old rooted cutting. Its useful life is between 15 to 30 years.

Leaves - Leaves alternate, simple, dark shiny green, diamond-shaped.

Propagated by cuttings.

Fall Colour:

Leaves - golden yellow.

Site Preference:

Wide soil adaptation. Requires generous amounts of water, but will survive while exposed to short periods of low moisture. Can be planted in full sun or half shade.

Hardiness:

Northern Alberta. Tolerates early and late frosts.

Uses:

For farmstead windbreaks, poplars should be planted in combination with a conifer. In shelterbelt situations it should be planted 2 to 4 m (6 to 13 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Brooks poplars are used for shade trees, accent planting, background, street tree, parks planting and shelterbelts. Too large for a normal city lot, but good for large properties and parks.

It is one of the two most desirable large male hybrid poplars in Alberta, the other one being Northwest poplar.

Problems:

Extensive root system spreads four times the height of the tree and may cause damage to pavement, concrete (heave up sidewalks and crack basement walls) and sewer lines. Roots will sucker if damaged.

Diseases:

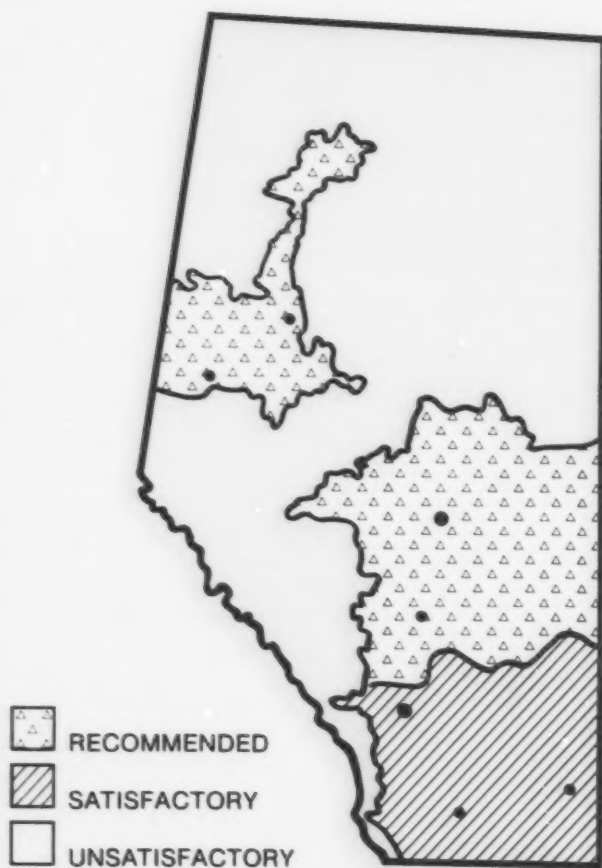
Canker - usually associated with a major setback eg. transplanting, heavy pruning, root disturbance, old age, and/or drought.

Insects:

Forest tent caterpillars. Poplar gall mites have been found on this plant only on rare occasions.

Pruning:

Light spring pruning is preferred to remove dead, diseased or damaged branches. Usually allowed to develop multistems in shelterbelts.



Scientific Name:

Populus x 'Griffin'

Plant Characteristics:

This male hybrid poplar originated from a presumed cross between a female plains cottonwood and a male Russian poplar (*Populus sargentii x Populus x petrowskyana*) made by Mr. A. Griffin, superintendent of the C.P.R.'s Engineering Division at Brooks, Alberta in 1918 and introduced in 1955.

The sharply uprising branches on the central stem (narrow pyramidal form) are the main characteristics of this tree. The tree has a rather narrow crown. It is considerably shorter than other poplars. When mature it should reach a height of 6 to 15 m (20 to 50 ft) with a spread of 3 m (10 ft). This tree has an annual growth rate of 30 to 150 cm (1 to 5 ft). It has a useful lifespan of 10 to 20 years. The sharply uprising branches give the tree a similar appearance to the Lombardy poplar.

Bark - Carnation green.

Buds - Spanish orange, sticky.

Leaves - Leaves are alternate, simple, rhombic to obovate, serrate margin, glabrous, usually one gland, 2.5 cm (1 in.) wide and 2.5 to 5 cm (1 to 2 in.) long. They are the smallest of all the shelterbelt poplars.

Propagated by cuttings.

Fall Colour:

Leaves - golden yellow.

Site Preference:

Wide soil adaptation. Requires generous amounts of water, but will survive while exposed to short periods of low moisture. Can be planted in full sun or half shade.

Hardiness:

Winter hardy to Peace River area but prone to frost-cracking.

Uses:

Through its compact, upright growth habit, this poplar is very suitable for shelterbelt plantings where space is limited eg. nurseries, irrigation farms with limited acreages. The bottom branches of this tree should never be removed, since this practice spoils the attractiveness and effectiveness of the tree and promotes infection.

In shelterbelt situations, it should be planted 2 to 4 m (6 to 13 ft) between trees in the row, and 5 to 8 m (17 to 26 ft) between rows.

Problems:

This tree is weak-rooted. It requires moisture and therefore is not useful in dry or non-irrigatable areas.

Diseases:

Highly susceptible to infections of canker.

Insects:

Highly susceptible to infestations of borers. It is resistant to galls.

Pruning:

The bottom branches of this tree should never be removed, since this practice spoils the appearance and windbreak effectiveness as well as promotes infection.



-  RECOMMENDED
-  SATISFACTORY
-  UNSATISFACTORY



Scientific Name:

Populus sargentii Dode.

Other Family Members:

Northwest and Brooks poplars.

Plant Characteristics:

This is the native poplar of the river flats in Southeastern Alberta, a large, vigorous, deciduous tree with upright-spreading branches forming a rather open broad crown. This tree can reach a mature height of 25 m (80 ft) with a spread of 15 m (50 ft). It is a fast-growing tree with a growth rate of approximately 30 to 150 cm (1 to 5 ft) per year, with a lifespan of 100+ years. The root system is usually quite shallow and wide-spreading, and in some locations the tree may develop deep roots. Only a male clone is available from the shelterbelt program.

Bark - The young branches are yellowish-grey. Older trees develop a dark grey, rough, furrowed bark.

Buds - Buds are brownish, sticky and pubescent.

Leaves - Leaves are alternate, simple, deltoid, 5 to 10 cm (2 to 4 in.) long. The margin of the leaf base is smooth, while the rounded sides are coarsely serrate. Leaves are light green, glossy above, slightly paler beneath, glabrous on either surface. Petioles long, often flattened sidewise.

Propagated by cuttings.

Fall Colour:

Leaves - golden yellow.

Site Preference:

Wide soil adaptation. Plant in full sun or half shade. Requires generous amounts of water, although it can survive drought conditions.

Hardiness:

Hardy - will survive under extreme climate exposure.

Uses:

It is only recommended for wide boulevards, larger farmsteads and parks. For shelterbelt situations it should be planted 2 to 4 m (6 to 13 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

The roots have to be able to reach the groundwater for survival.

Some suckering occurs if the roots are damaged.

Because of structural weaknesses the cottonwood cannot be recommended for planting in the vicinity of buildings. Older trees may be subject to breakage of large branches in severe windstorms.

Diseases:

Appears to be more resistant to canker than the hybrid poplars.

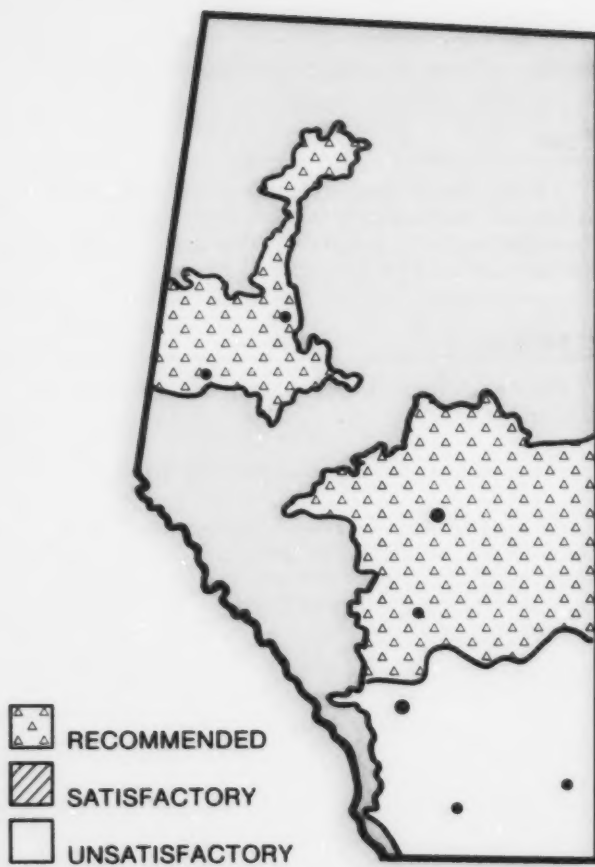
Susceptible to leaf rust.

Insects:

Forest tent caterpillars.

Pruning:

Usually allowed to develop multistems in shelterbelts. Prune only to remove dead, diseased or broken branches.



Scientific Name:

Salix pentandra L.

Other Family Members:

Acute leaf willow (similar).

Plant Characteristics:

This tree is deciduous, fast-growing, and dioecious. The branchlets are glabrous and glossy; young growth is sticky.

This willow has unusually broad leaves for the genus and is distinctive because of the dark green colour, the leathery texture, the shininess of its leaves, and it retains its leaves late into the fall. Laurel leaf willow can grow to a mature height of 8 to 15 m (26 to 50 ft) with a spread of 15 m (50 ft). It has an annual growth rate of 50 to 200 cm (1.5 to 6 ft) with between 25 to 60 useful years. It is the most successful willow species.

Bark - Old bark is grey and fissured; twigs are shiny and greenish to brown.

Buds - Yellow.

Leaves - Leaves are alternate, simple, elliptic or ovate to 4 to 10 cm (1.5 to 4 in.) long, and 1 to 2 cm (0.5 to 0.75 in.) wide, serrulate, glossy dark green above, paler beneath. The petioles are yellow, 6 to 10 mm (0.25 to 0.5 in.) long. The catkins appear with the leaves.

Propagated by cuttings.

Fall Colour:

Green leaves remain late into fall.

Site Preference:

Laurel leaf willow can be planted in full sun or half shade. It cannot withstand drought and prefers an organic soil. It likes moisture but not poorly drained soil - will not tolerate alkaline soils. It can tolerate some flooding.

Hardiness:

Hardy - will survive under extreme climate exposure, liable for tip dieback when young (not as hardy as acute).

Uses:

Laurel leaf willow is planted as screening, parks planting, shelterbelt and single-stemmed specimen in a landscape situation.

For shelterbelt situation, it should be planted 2 to 4 m (6 to 13 ft) trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Somewhat susceptible to dieback.
Performs poorly in arid sites.

Diseases:

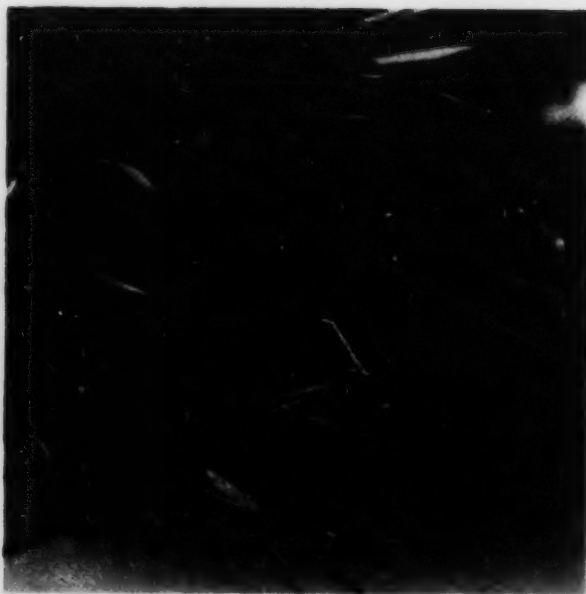
Susceptible to chlorosis.

Insects:

Moderately insect free.

Pruning:

Should be allowed to develop multistems in shelterbelts. Prune only to remove dead, diseased or broken branches.



Scientific Name:

Salix acutifolia Willd.

Other Family Members:

Laurel leaf willow (similar).

Plant Characteristics:

Acute leaf willow is a fast-growing shrub or tree with a large number of wide spreading stems. It can reach a mature height of 8 to 15 m (26 to 50 ft) and a spread of 9 m (30 ft). Its annual growth rate varies between 50 to 200 cm (1.5 to 6 ft) and a useful lifespan of between 25 and 60 years.

Branches are slender, violet or red-brown, bloomy. They can be used for coarse basket work.

Bark - Older stems develop a deep furrowed bark.

Leaves - The leaves are alternate, simple, lanceolate to linear-lanceolate, long-acuminate, cuneate. It has shiny leaves 6 to 12 cm (2.5 to 5 in.) long and 1 to 2 cm (0.25 to 1 in.) wide with a dark green upper surface and duller green lower surface. The margins are finely-toothed and extend to a pointed tip.

Propagated by cuttings.

Fall Colour:

Green leaves remain late into fall.

Site Preference:

Acute leaf willow can be planted in full sun or half shade. It likes moisture, but not poorly drained soil, and cannot tolerate flooding. It prefers organic soil and will not tolerate alkaline soil.

Hardiness:

Hardy - will survive under extreme climate exposure, but liable for tip kill when young.

Uses:

Acute leaf willow is planted as screening, shelterbelt and single-stemmed specimen in a landscape situation.

In shelterbelt situations this willow should be planted 2 to 4 m (6 to 13 ft) between trees in the rows and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Performs poorly in arid sites.

Diseases:

Moderately disease free.

Insects:

The leaves of this willow are often infested with reddish galls in which a larva of the gall wasp develops.

Pruning:

When the tree is young, it can be pruned to a single straight trunk, but also grows as multi-stemmed especially in shelterbelts.



-  RECOMMENDED
 SATISFACTORY
 UNSATISFACTORY



Scientific Name:

Salix alba var *vitellina* (L.) J. Stokes.

Other Family Members:

White willow, Siberian silver leaf willow.

Plant Characteristics:

Golden willow is distinguished by its shining golden twigs. The masses of bright golden yellow twigs are distinctly showy and may be considered as an ornamental asset to the winter scene. They are also used for wicker work and basketry.

This fast-growing, deciduous shrub or tree can grow to a mature height of 7 to 12 m (23 to 36 ft), with a spread of 9 m (30 ft). It has an annual growth rate of between 50 to 150 cm (1.5 to 3.5 ft), and a useful lifespan of 25 to 60 years.

Leaves - Leaves are alternate, simple, narrow-lanceolate, long-acuminate, serrulate, glaucous beneath and slightly silky; 4 to 10 cm (1.5 to 4 in.) long.

Propagated by cuttings.

Fall Colour:

Green leaves remain late into fall.

Site Preference:

Golden willow can be planted in full sun or half shade. It likes moisture, but not poorly drained soil, and will not tolerate drought. It prefers organic soil, not recommended for grey-wooded soils, and will not tolerate alkaline soils.

Hardiness:

Sensitive - might experience winter damage.

Uses:

Golden willows are used for accent planting, parks planting, shelterbelts, and single-stemmed landscape plantings.

In shelterbelt situations this willow should be planted 2 to 4 m (6 to 13 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Performs poorly on arid sites.

Diseases:

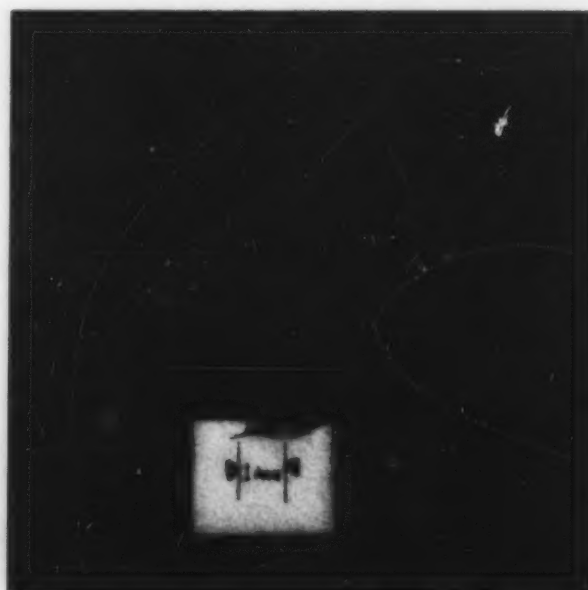
Moderately disease free.

Insects:

Moderately insect free.

Pruning:

When the tree is young, it can be pruned to a single straight trunk, but also grows as multi-stemmed especially in shelterbelts.



Scientific Name:

Salix amygdaloides Anderss

Plant Characteristics:

The peach leaf willow is a hardy, fast-growing, deciduous tree with ascending branches appearing silvery-grey. This is a small to medium-large tree, native to the northern plains and occasionally seen as a sizable tree along streams or watercourses. Develops a thicket of stems.

It grows to a mature height of 5 to 8 m (17 to 26 ft), with a spread of 5 m (17 ft). It has an annual growth rate of 15 to 100 cm (6 to 40 in.), and a useful life of 25 to 50 years. Catkins appear at the same time as the leaves.

Bark - The bark is rough, dark reddish-brown, branches greyish-brown, twigs yellowish to reddish-brown, drooping.

Leaves - Leaves are alternate, simple, 5 to 12 cm (2 to 5 in.) long, 1.5 to 3 cm (0.5 to 1.25 in.) wide, ovate-lanceolate, acuminate, tapering to base; margins closely serrate; light to yellowish-green above, glaucous below, glabrous on both sides. Petiole 6 to 15 mm (0.25 to 0.5 in.) long.

Propagated by cuttings.

Fall Colour:

Green leaves remain late into fall.

Site Preference:

Peach leaf willow can be planted in full sun or half shade. It likes moisture, but not poorly drained soil and cannot tolerate flooding. It prefers organic soil and will not tolerate alkaline soil. This willow will not tolerate drought.

Hardiness:

Hardy - will survive under extreme climate exposure.

Uses:

In shelterbelt situations this willow should be planted 2 to 4 m (6 to 13 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Performs poorly in arid sites.

Pruning:

Usually does not require pruning. Prune to remove dead, diseased or broken branches.



Scientific Name:

Acer negundo L.

Other Family Members:

Amur and Silver Maples.

Plant Characteristics:

Manitoba maple is a tall deciduous tree growing to a mature height of 7 to 12 m (23 to 40 ft), a spread of 11 m (36 ft), and an annual growing rate of 10 to 60 cm (4 to 24 in.). It is a good soil stabilizer. Native to eastern prairies.

Bark - Rough, greyish.

Flowers - Dioecious (male and female flowers on separate trees). Insignificant flowers appear slightly before the leaves.

Fruit - A samara consisting of two-winged seeds about 10 mm (0.38 in.) long, which stay on the tree during the early part of the winter.

Leaves - Opposite, pinnately compound with 3 to 5 leaflets, rarely 7 or 9. Each leaflet is ovate, coarsely serrate; bright green, lighter green below; 5 to 12 cm (2 to 5 in.) long, each with a short stalk. Terminal leaflet often three-lobed.

Propagated by seed.

Fall Colour:

Leaves are red-brown.

Site Preference:

Found along streams, in ravines, and wooded valleys on the prairies and parklands. It has wide soil adaptability, can survive drought conditions, and can withstand some shade.

Hardiness:

Hardy - will survive under extreme climate exposure.

Uses:

Ornamental plantings, shelterbelts. In shelterbelt situation Manitoba maple should be planted 2 to 4 m (6 to 13 ft) between trees in the row, and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Weak wood.
Susceptible to pests, especially aphids and box elder beetles.
Short life.
Irregular growth habit.
Seeds germinate and become weeds.
Can suffer top dieback during drought years.

Diseases:

Susceptible to large leaf spot and powdery mildew.

Insects:

Attracts aphids and drips honeydew.
Attracts box elder beetles.

Pruning:

Pruning should be done as soon as leaves develop as maples bleed. Prune to remove dead, diseased or broken branches.



Scientific Name:

Fraxinus pennsylvanica Marsh.

Other Family Members:

'Patmore' 'Marshall's Seedless' and 'Summit' (often not hardy), Black and Manchurian Ash.

Plant Characteristics:

Green has a straight, single trunk with a high-headed, open crown. Depending on the seed source, some specimens may have droopy branches when mature. Leaves are late to appear in the spring and drop early in the fall. Easy to transplant.

Green ash can attain a mature height of between 12 to 20 m (40 to 65 ft), and a spread of 9 m (30 ft), with an annual growth rate of 10 to 60 cm (4 to 24 in.). It has a useful lifespan of 50 to 90 years.

Bark - Greyish sometimes with orange cast. Tight ridges, shallowly furrowed in an attractive irregular pattern.

Buds - Large, rusty-brown, woolly, set above leaf scar which forms almost a straight line.

Flowers - Dioecious; seeds a one-winged samara 2.5 to 5 cm (1 to 2 in.) long in clusters, shaped like a canoe paddle.

Leaves - Opposite, medium green, odd-pinnate, 5 to 9 leaflets, ovate to ovate-lanceolate. Pubescent beneath. Margin smooth to faintly irregularly toothed.

Propagated by seed.

Fall Colour:

Leaves yellow-brown - not significant since leaves drop so early.

Site Preference:

Green ash has a wide soil adaptation, tolerating wet, alkaline, and drought conditions. It should be planted in full sun, but can withstand some shade.

Hardiness:

Fully hardy to northern Alberta. It will survive under extreme climate exposure.

Uses:

Green ash is planted as a street tree, shelterbelt, background, landscape specimen and shade tree.

In shelterbelt situations green ash should be planted 1.5 to 3 m (4.5 to 10 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Sunscauld on bark of young trees in winter.

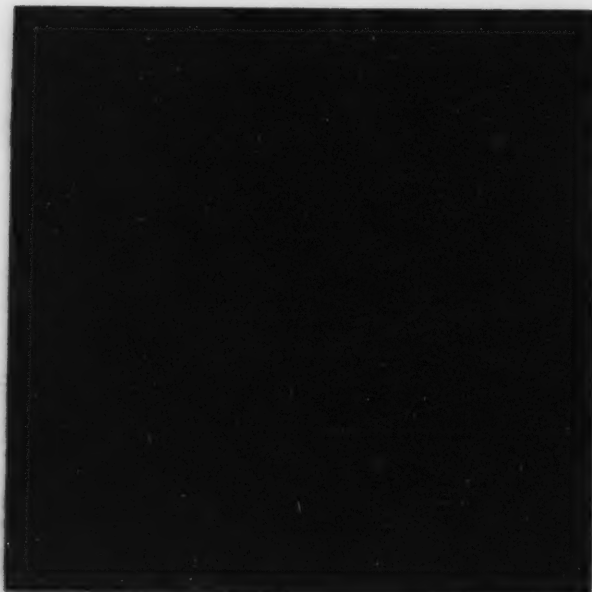
Female specimens are not often planted because of their messy winter appearance and the samaras they drop.

Insects:

Ash bark beetles in southern Alberta, aphids, gall mites, borers.

Pruning:

Usually develop as single stemmed trees, prune in spring to remove dead, diseased or broken branches.



Scientific Name:

Quercus macrocarpa Michx.

Plant Characteristics:

Bur Oak is a slow-growing, tall deciduous tree with a mature height of 10 to 14 m (30 to 45 ft) and a spread of 6 m (20 ft). It has an annual growth rate of 5 to 30 cm (2 to 12 in.), and a useful life of 100+ years. Native to eastern prairies.

Bark - The tree bark is light brown to grey, deeply furrowed and scaly. The small branches have corky ridges.

Fruit - The fruit (seed), a small acorn, is probably the most readily recognized feature. A cup, which has a fringe-like border, encloses half of the acorn.

Leaves - The leaves are roundly lobed and have fine white hairs underneath.

Propagated by seed.

Fall Colour:

Its leaves are red-brown in fall.

Site Preference:

Bur oak prefers a rich, loam type soil, but survives in poor, rocky sites. It can withstand some shade, and can survive drought conditions.

Hardiness:

Hardy - will survive under extreme climate exposure.

Uses:

Farmstead shelterbelts, boulevard tree specimen planting.

In shelterbelt situations bur oak should be planted 2 to 4 m (5 to 12 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows. Since growth is slow this tree should be used in combination with a row of willow or poplar 7 to 8 m (20 to 25 ft) away from the oak. Do not use oak for field windbreak plantings.

Problems:

Difficult to transplant because of its characteristic taproot.

Slow to very slow growing.

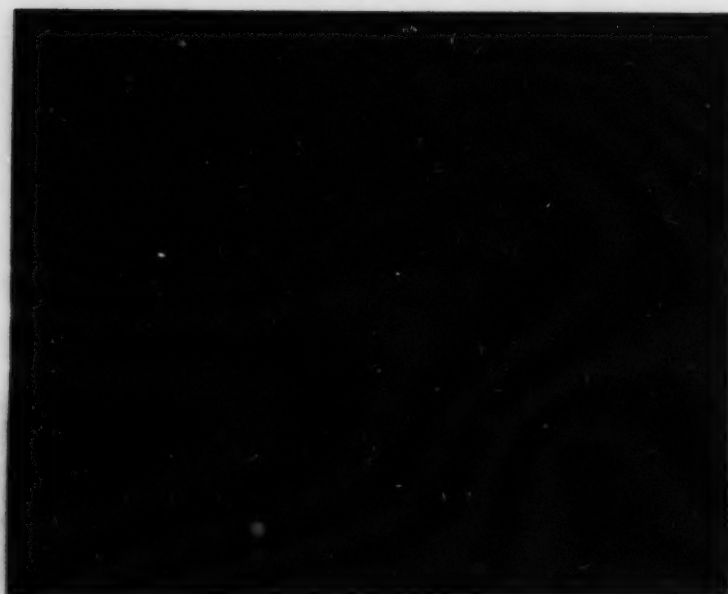
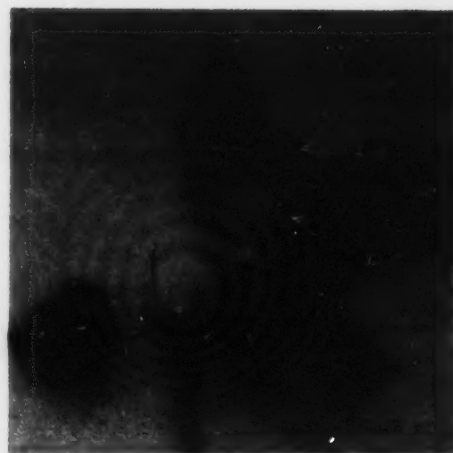
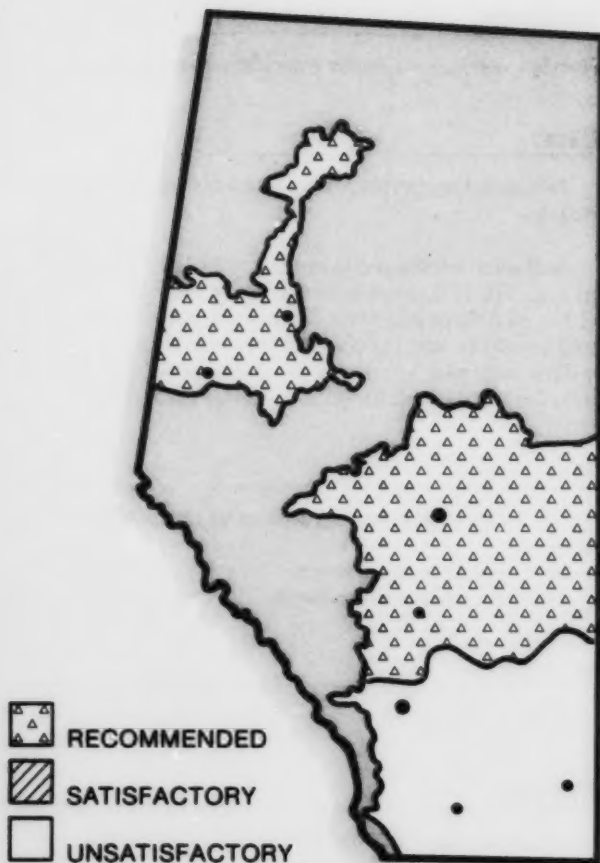
Does not always prove hardy.

Insects:

Leaf gall wasps

Pruning:

Rarely to remove broken, diseased or crossing branches, or a second leader.



Scientific Name:

Betula papyrifera Marsh.

Other Family Members:

Chickadee Birch.

Plant Characteristics:

White birch is a tall deciduous tree, growing to a mature height of 6 to 12 m (20 to 40 ft), with a spread of 6 m (20 ft). It has an annual growth rate of 10 to 45 cm (4 to 18 in.), with a useful life of 15 to 50 years.

Bark - Older bark has good ornamental value. It is white, papery, peeling in thin sheets after 4 to 6 years. The inner bark is reddish-orange, turning black with age.

Buds - Greenish-brown blunt or sharp pointed.

Flowers - Monoecious (male and female on same tree). Male catkins form in fall, remain naked over winter, and open in spring.

Fruit - Nutlet with membranous wings.

Leaves - Alternate, simple, ovate, coarsely serrate, usually somewhat pubescent on veins beneath, but glabrous above.

Propagated by seed.

Fall Colour:

Leaves are yellow.

Site Preference:

Plant white birch in full sun only; will not tolerate full shade.

It has a wide soil adaptation, tolerating acid sites, but does best on well-drained sandy or silty-loam soils with adequate moisture. Does poorly on dry sites.

Needs some protection from winds.

Hardiness:

Hardy to Arctic Circle.

Uses:

Accent plant, shelterbelt, lawn specimen.

In shelterbelt situations white birch should be planted 1 to 3 m (3 to 10 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Winter dieback from desiccation and root injury.

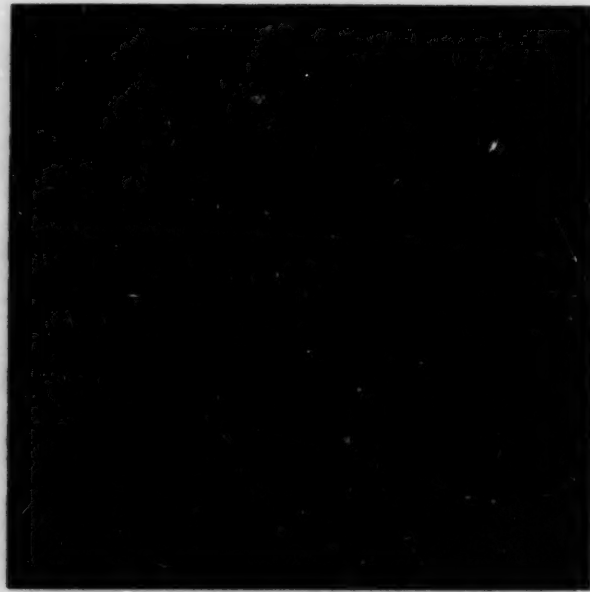
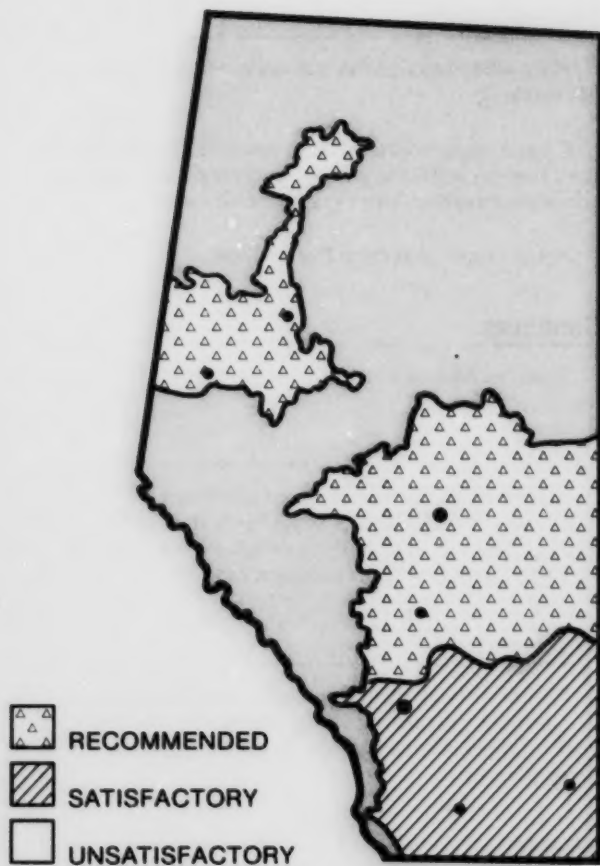
Does not tolerate high temperatures. Roots are particularly susceptible to death due to high soil temperatures.

Insects:

Birch leaf miner
Birch twig borer
Sapsucker

Pruning:

Pruning should be done soon after leaves develop, as birch are bleeders, to remove dead, diseased or broken branches. Usually develop single stem.



Scientific Name:

Prunus padus var *commutata* Dipp.

Other Family Members:

Amur Cherry, Dropmore Mayday.

Plant Characteristics:

Mayday is a small deciduous, usually multi-stemmed tree. It can grow to a mature height of 5 to 10 m (15 to 30 ft), and a spread of 6 m (20 ft). It has an annual growth rate of 15 to 60 cm (6 to 24 in.) and has a useful life of 12 to 50 years.

Mayday is naturally low-headed with ascending branches. It is one of the first trees to leaf out in the spring.

Bark - Mature bark is 'gun metal' grey.

Flowers - Flowers are white and very fragrant and appear in May after the leaves have emerged.

Fruit - Black berries, 6 to 8 mm (0.25 in.) in diameter, appear in late summer. Astringent taste.

Leaves - Leaves are alternate, dark green above, lighter below; elliptic to obovate, 6 to 12 cm (2 to 5 in.) long. The margin is coarsely and sharply serrate.

Propagated by seed.

Fall Colour:

Leaves are yellow, but some years they appear with a little red.

Site Preference:

Mayday has a wide soil adaptation with some drought resistance. It prefers half shade to full sun locations.

Hardiness:

Hardy to northern Alberta.

Uses:

Suitable for large yards, park, specimen, mass planting, or shelterbelts.

In shelterbelts mayday should be planted 1 to 3 m (3 to 10 ft) between trees in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Fruit in late July can stain concrete.

Diseases:

Black knot (fungus). Prune out and burn.

Insects:

Forest tent caterpillars
Aphids (in August)

Pruning:

Prune to remove dead, diseased or broken branches.



Scientific Name:

Prunus virginiana L.

Other Family Members:

Schubert Chokecherry (purple leaves).

Plant Characteristics:

Chokecherry is a large, deciduous shrub to small tree growing to a mature height of 4 to 8 m (13 to 26 ft), with a spread of 5 m (17 ft), and an annual growth of 10 to 50 cm (4 to 20 in.). The six year old and older wood should be removed to promote vigorous growth and fruiting of the shrub.

Flowers - Chokecherry flowers at the same time as it leafs out. The flowers are 8 to 10 mm (0.25 to 0.38 in.) across, white, in dense racemes, 7 to 15 cm (2.5 to 6 in.) long.

Fruit - Fruit very astringent, about 8 mm (0.25 in.) across, dark purple; stone smooth.

Leaves - Leaves broadly elliptic to obovate, sharply serrulate, glabrous or nearly so beneath; 4 to 12 cm (1.5 to 5 in.) long.

Propagated by seed.

Fall Colour:

Leaves red-brown to yellow.

Site Preference:

Chokecherry prefers a loam soil, can withstand some shade, and will survive while exposed to short periods of low moisture. They grow wild along riverbanks, thickets and open woods.

Hardiness:

They will survive under extreme climate exposure.

Uses:

Chokecherries can be planted 1 to 3 m (3 to 10 ft) between plants in the row, and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Suckers.

Reported to cause occasional poisoning of sheep and cattle through the hydrocyanic content of the leaves, especially after frost.

Diseases:

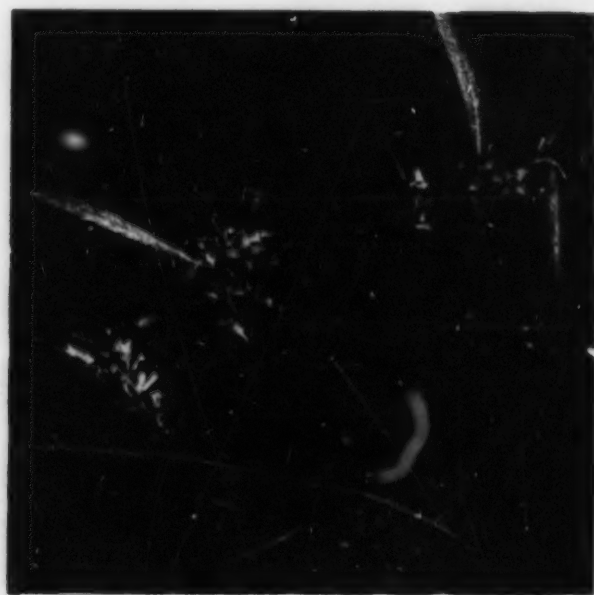
Susceptible to black knot (fungus). Control by pruning and burning removed portions.

Insects:

Fruit flies affect fruit.

Pruning:

Removal of older stems will give better fruit.



Scientific Name:

Elaeagnus angustifolia L.

Plant Characteristics:

Russian olive is a small deciduous tree with attractive foliage growing to a mature height of 6 to 12 m (20 to 40 ft), a spread of 6 m (20 ft), and has an annual growth of 10 to 30 cm (4 to 12 in.).

It has a useful life of 10 to 20 years. It often develops thorns 2 cm (0.75 in.) long along the branches.

Flowers - Yellow, very fragrant in late June.

Fruit - Dry, silvery with a single oblong seed on very short stalks.

Leaves - Lanceolate, 3 to 10 cm (1 to 4 in.) long, generally grey green above and silvery beneath.

Propagated by seed.

Nitrogen Fixing:

Russian Olive may have some roots nodulated with nitrogen fixing bacteria.

Fall Colour:

Retains its leaves during several months of the winter.

Site Preference:

Russian olive should be planted in full sun. It is not recommended for planting in northern Alberta because it often winterkills. Since Russian olive is adapted to periodic drought and will tolerate alkaline soils, it is recommended for planting in southern Alberta.

Hardiness:

Sensitive - Russian olive might experience winter damage.

Uses:

Landscape specimen, shelterbelts.

Russian olive can be planted 1 to 3 m (3 to 10 ft) between plants in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

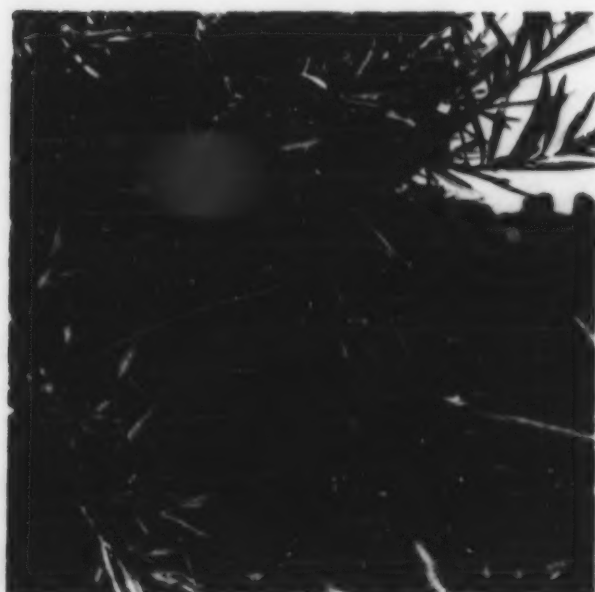
Occasionally winterkills in northern Alberta.

Diseases:

Bacterial canker on trunk in older plants.

Pruning:

Caution, has thorns. Dead, diseased or broken branches should be removed.



Scientific Name:

Hippophae rhamnoides L.

Plant Characteristics:

Sea buckthorn is a large deciduous shrub growing to a mature height of 4 to 6 m (13 to 20 ft), a spread of 3.5 m (15 ft), and an annual growth of 10 to 20 cm (4 to 8 in.).

It is irregular in shape with spiny branches. Male and female flowers occur on different plants (dioecious). The six year old and older wood should be removed to promote vigorous growth of the shrub.

Branches - Grey, usually spiny.

Flowers - Inconspicuous, yellow, appearing before leaves.

Fruit - Very showy orange-yellow berries persisting through winter.

Leaves - Linear to linear-lanceolate, 2 to 6 cm (1 to 2.5 in.) long, alternate, covered on both sides with silvery-white scales, undersides covered with brown dots.

Propagated by seeds sown in autumn or stratified, cuttings of ripened wood in spring, root cuttings, or suckers.

Nitrogen Fixing:

Sea buckthorn may have some roots nodulated with nitrogen fixing bacteria.

Site Preference:

Sea buckthorn prefers sandy soil, is intolerant to shade, can survive drought conditions, and can tolerate alkaline soils.

Hardiness:

Hardy - will survive under extreme climate exposure.

Uses:

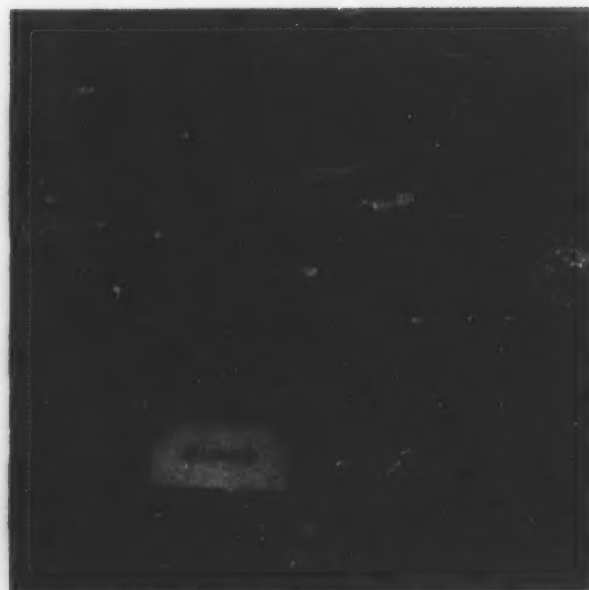
Sea buckthorn can be planted 1 to 3 m (3 to 10 ft) between plants in the row and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Many suckers, especially under cultivation.

Pruning:

Removal of older stems will keep the plants vigorous.



Scientific Name:

Sambucus racemosa L.

Other Family Members:

'Redman', 'Goldenlocks', 'Sutherland Golden', 'Golden Plume' elders.

Plant Characteristics:

Red elder is a tall-growing, deciduous shrub growing to a mature height of 3 to 4 m (10 to 13 ft), a spread of 2.5 m (8 ft), and an annual growth of 15 to 30 cm (6 to 12 in.). The six year old and older wood should be removed to promote vigorous growth of the shrub.

Bark - Thin, light reddish-brown, with narrow, intersecting scaly ridges. Wood has corky brown pith.

Flowers - Flowers small, in cream-coloured clusters 5 to 8 cm (2 to 3 in.) across, appearing in late May or early June.

Fruit - Small, but the bright red clusters are quite showy. They appear in July or August, and turn black with frost.

Leaves - Leaves are opposite, 4 to 8 cm (1.5 to 3 in.) long, compound pinnate, with 3 to 7 ovate to elliptic leaflets. Sharply and coarsely serrate. Leaflets nearly sessile.

Propagated by seed.

Site Preference:

Red elder will grow under a wide variety of soil conditions, it can survive drought conditions and it can withstand some shade.

Hardiness:

Sensitive - it might experience some winter damage.

Uses:

Screen planting, shelterbelt, and sometimes used as a small single or multi-stemmed tree.

Red elder can be planted 1 to 3 m (3 to 10 ft) between plants in the row, and 5 to 8 m (17 to 26 ft) between rows.

Problems:

Winter dieback above snowline.

Diseases:

Crown rot

Insects:

Aphids

Pruning:

Removal of older and winter injured wood.



Scientific Name:

Caragana arborescens Lam.

Plant Characteristics:

This plant is native to Siberia, from Russia through to Northern China. It is planted extensively throughout the Canadian Prairies.

Caragana has an upright growing habit. Can be multi-branched or single stemmed. Caragana has a rapid growth rate when young and slows down when older. This shrub is erect and branches seldom spread, until the shrub is old.

Caragana can reach a height of 3 to 5 m (10 to 15 ft) at maturity, with a spread of 3.5 m.

Caragana is a long lived, tall hedge plant. It can live 50+ years. Its growth rate can range from 15 to 45 cm (6 to 18 in.) a year till maturity if growing conditions are ideal.

Leaves - The leaves are 7 to 13 cm (3 to 5 in.) long and arranged alternately on the stem, with each leaf composed of 8 to 12 oval leaflets ranging in length from 2 to 2.5 cm (1 in.). The leaflets are usually darker green on the upper surface with a pale green underside, edge smooth, shape elliptic, apex round, base round.

Flowers - Yellow flowers appear early in the season forming a pod in late June or early July. Pods are 3.5 to 5 cm (1.5 to 2 in.) long. As the pods ripen they crack and burst, spreading seeds.

Bark - Bark is olive green and smooth. Short spines are present on the stem.

Nitrogen Fixing:

Caragana is a legume and roots are usually nodulated with nitrogen fixing bacteria.

Site Preference:

Caragana is able to thrive on a wide variety of soils and under tough growing conditions. Caragana is unable to survive on sites where repeated flooding occurs. It prefers a relatively dry to moderate dry soil, on well drained sites can tolerate some saline conditions, and is very drought tolerant.

Caragana prefers full sun, but can tolerate some shade.

Hardiness:

Extremely winter hardy.

Uses:

Should be planted in a single row field windbreak or roadside belt, with a planting distance of 30 to 60 cm (1 to 2 ft) in the row. In multiple row shelterbelts it is a recommended hedgerow for the windward side of the belt at 5 to 8 m (17 to 26 ft) between rows. Caragana provides cover for upland game. It can also be used for flowering hedges and screen plantings.

Problems:

Caragana produces large numbers of seeds, which if not controlled can and may become a weed problem. Breaking of stems can occur with heavy snow loads.

Diseases:

The leaves are subject to leaf spot diseases that can defoliate the shrub in late summer in moist areas of Alberta.

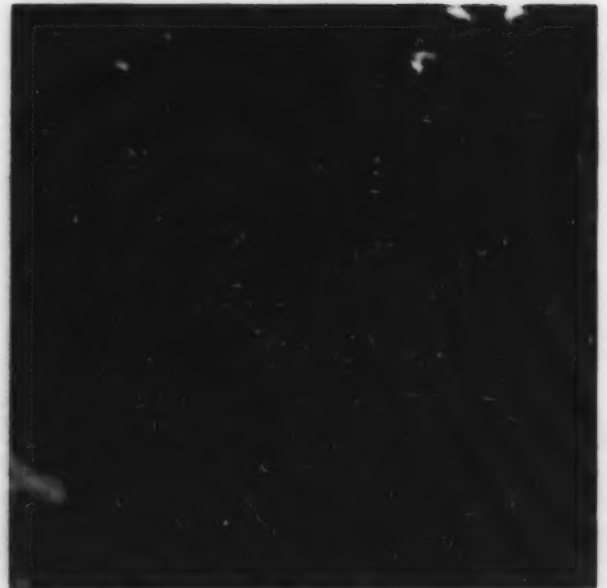
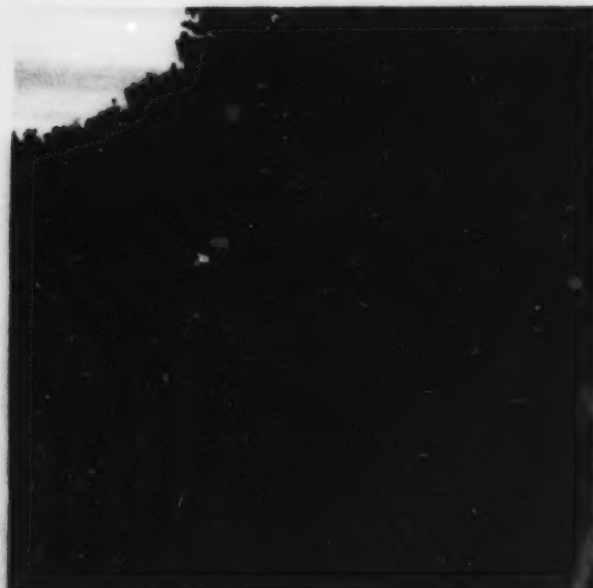
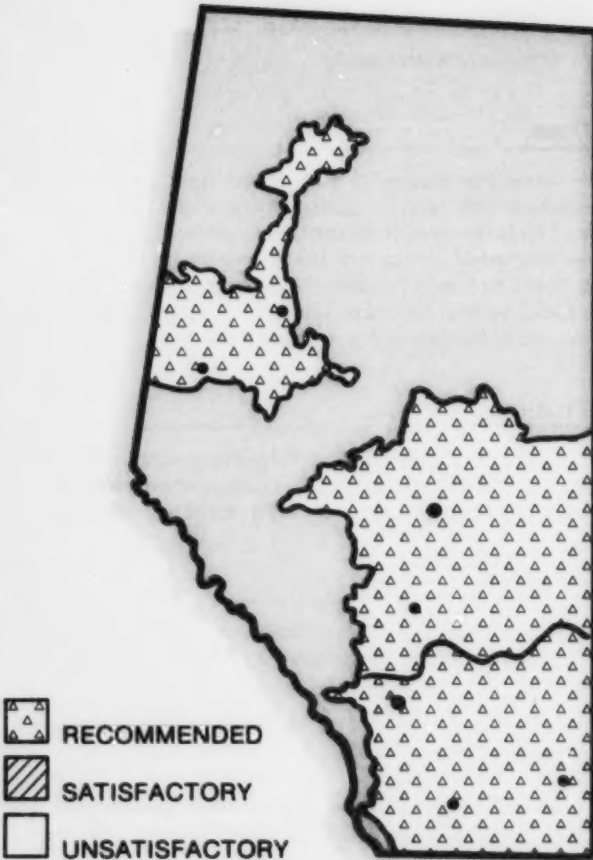
Insects:

Subject to aphids, spider mites, blister beetles and grasshoppers causing partial or complete defoliation.

Pruning:

Side trimming a caragana shelterbelt encourages new growth and prolongs its lifespan. Mature caragana should not be trimmed to less than 3 m in width.

Top trimming caragana can reduce the height of old weak branches, and encourage new growth. Caragana can be cut back to ground level for renovation.



Scientific Name:

Syringa villosa Vahl.

Plant Characteristics:

Villosa lilac was introduced in North America from Northern China and Mongolia. Performs well in all regions of the prairies.

Villosa lilac is a large coarse shrub, with rapid growth rate when young. Villosa lilac can reach the height of 3 to 5 m (10 to 17 ft), with a spread of 2.5 m (8 ft).

The leaves of the villosa lilac are simple, elliptical to oblong in shape, from 5 to 15 cm long (2 to 6 in.) and 3 to 7 cm wide (1 to 3 in.). The opposite leaves are dark green, smooth edged and very distinctively veined.

Villosa lilac is a long lived tall hedge plant. It can live 50+ years. Its growth rate can vary from 5 to 30 cm (2 to 12 in.) a year.

Flowers - Flowers are borne in clusters at the ends of branches during mid and late June, thereby giving its name late lilac. Clusters vary in size from 12 to 15 cm (5 to 6 in.). The florets vary in colour from washed out mauve, pink, fading to white as the flowers mature. The flowers appear approximately two weeks later than common lilac. The period of flowering is short and seed capsules form early July. This lilac is non-suckering and deep rooted, does not compete with adjacent crops of gardens.

Bark - Tan brown when young.

Fruit - Tan capsule.

Fall Colour:

Villosa lilac turns yellow in fall.

Site Preference:

Lilac performs best in well drained clay or loam soils.

Lilac does not perform well in sandy soils and will not tolerate poorly drained sites. It often requires more care than other species during the establishment period, but will grow in a wide variety of soils.

Villosa lilac is very drought resistant.

Grows best in full sun, can tolerate some shading. Requires full sun for maximum bloom quality, tolerant of moderately alkaline soils.

Hardiness:

Winter hardy.

Uses:

Villosa lilac is most suitable for the outer row of farmstead shelterbelt, or single row roadside or field belt. In field belts, lilac provides cover for wildlife. The branches and seeds are seldom used for food by wildlife.

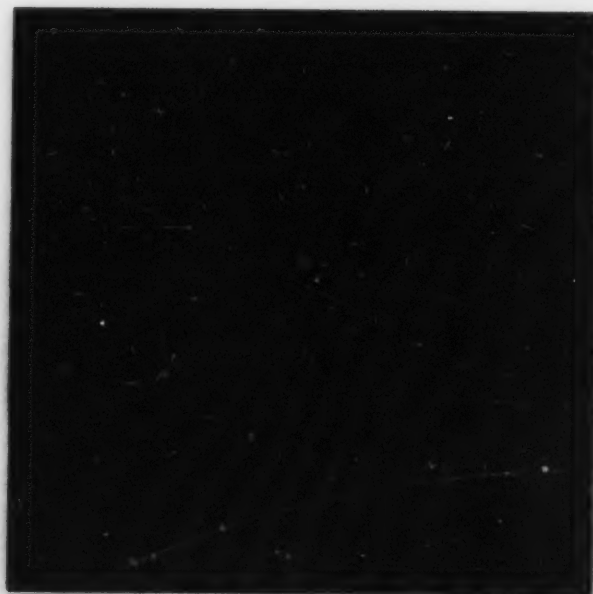
The fact that late lilac does not sucker is often considered to be an advantage of this shrub. It has less value as an ornamental than common lilac. Spacing recommendations are 1 to 1.5 m (3 to 4.5 ft) in the row, in multiple-row plantings the lilac should be planted 5 to 8 m (16 to 26 ft) away from adjacent row of trees.

Insects:

Attacked by borers, scale insect, leaf miner.

Pruning:

Pruning should only involve the removal of dead, diseased, broken or crossed branches. Prune to remove large wide spreading branches to keep the shelterbelt in bounds.



Scientific Name:

Syringa vulgaris L.

Plant Characteristics:

The shrub originates in Southeastern Europe, introduced to North America, and fully hardy throughout Alberta.

Large deciduous shrub, with upright branching. Common lilac is a wide spreading shrub, up to 4 m (12 ft) in height, with a 2.5 m (8 ft) spread. Produces lots of suckering. Does not like competition.

Common lilac is a long lived, tall hedge plant. It can live 50+ years. Its growth rate is from 5 to 30 cm (2 to 12 in.) a year.

Leaves - The leaves are simple, opposite, heart shaped at the base, with pointed tips. The leaves are a dark, dull green from 7 to 10 cm (3 to 4 in.), edge smooth, surface smooth (somewhat leathery).

Flowers - Usually purple, but also creamy white, blues and pinks, are fragrant and appear in clusters which develop from the terminal bud. Floret size 5 cm (2 in.), clusters vary in size from 15 to 20 cm (6 to 8 in.). Flowers bloom from May to first week in June.

Fruit - Tan capsules produced in October.

Site Preference:

Common lilac will perform well on a variety of soils. It will perform satisfactorily on dry, sandy soils, but requires a well drained soil. It is not recommended for peaty soils. Lilacs are intolerant of poor drainage and may easily succumb in areas where water stands for as short as a few days, during any part of the growing season.

Common lilac can survive drought conditions. Can tolerate some shade, but requires full sun for maximum bloom quality and production.

Moderately tolerant of alkaline conditions.

Hardiness:

Winter hardy.

Uses:

Common lilac is recommended as a single row hedge in farmstead shelterbelts, field windbreaks or roadside planting. In a multiple-row belt the lilac is recommended as a single row planting in the windward side of the belt. The habit of developing sucker growth is beneficial in creating a dense hedge. Wildlife prefer a dense hedge for protection.

Problems:

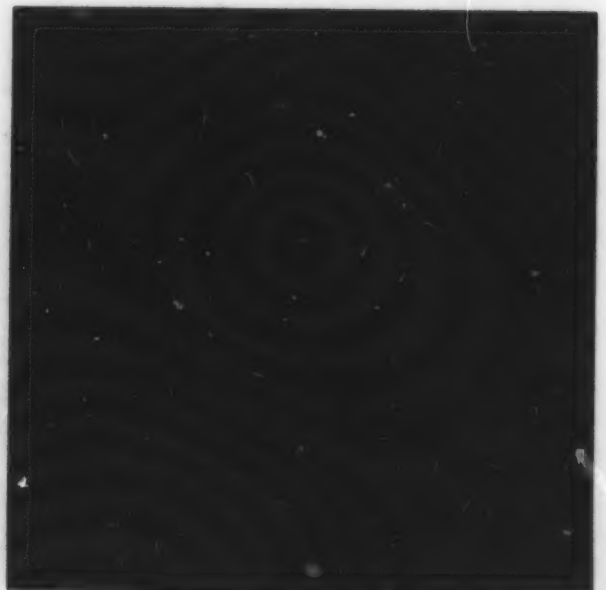
The mature plant tends to develop numerous suckers. The suckering can be controlled with regular cultivation up to the hedge.

Insects and Diseases:

A crown rot at ground level can cause death in some areas. Twig borers and leaf miner usually need controlling.

Pruning:

Pruning should only involve the removal of dead, diseased, broken or crossed branches. Prune to remove large wide spreading branches to keep the shelterbelt in bounds. This plant suckers freely.



Scientific Name:

Lonicera tatarica L.

Plant Characteristics:

Tatarian honeysuckle originated in Southern Russia and Turkistan. Introduced to North America, now widely distributed throughout Alberta.

This is a fast growing somewhat leggy tall hedge shrub. It can reach 3 m (10 ft) in height with a 2.5 m (8 ft) spread.

Tatarian honeysuckle can be long lived, 50+ years if properly maintained. Honeysuckle can grow from 10 to 30 cm (4 to 12 in.) per year at an early age.

Leaves - Leaves are opposite with smooth edge, leaf surface is a glossy blue green, and a pale green underside, ranging in size from 2 to 8 cm (1 to 4 in.) in length.

Flowers - Flowers are white through pink to a deep red, approximately 1.5 to 2 cm (0.50 to 0.75 in.) long in pairs, two lipped and very numerous. Produced in June.

Fruit - Yellow orange to red berry, not readily eaten by birds, approximately 4 mm (0.25 in.) in diameter. Fruit matures in July.

Bark - Older bark is light brown/grey with a tendency to peel off in long strips. Young twigs are pale yellow and smooth.

Site Preference:

Tatarian honeysuckle will tolerate a wide variety of soils, but requires a well drained soil. It has established itself in woodlands and moist spots, but will not tolerate flooding for extensive periods.

Tatarian honeysuckle is drought tolerant.

Grows best in full sun, but can tolerate a little shading.

Hardiness:

Tatarian honeysuckle is extremely winter hardy, the plant will survive under extreme climate exposure.

Uses:

The flowers, which occur at the beginning of June are of ornamental value. It is recommended that honeysuckle be planted with other rows of shelterbelt trees and as a hedge for farmstead shelterbelts. Planting distances within the row are recommended at 1 to 1.5 m (3 to 4.5 ft). It may also be used as single row for fields or roadside.

Problems:

Aphids cause a severe problem, making the planting a very messy site.

Diseases:

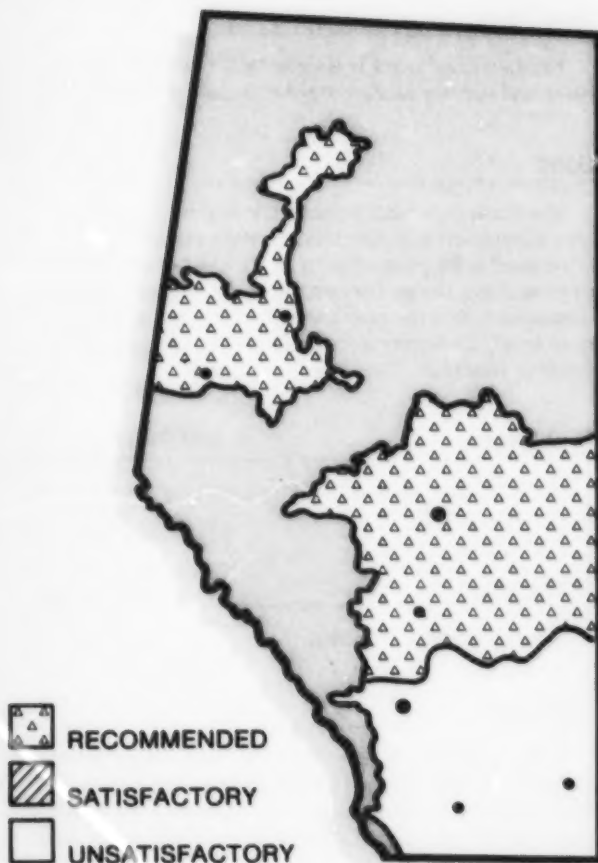
Relatively free of disease.

Insects:

Subject to aphids, especially the black or mistletoe aphid, mites and blister beetles. Blister beetles can defoliate honeysuckle within two to three days. Since these beetles are migrating, they are difficult to catch in time.

Pruning:

Old stems can be removed at ground level to keep the shelterbelt vigorous.



Scientific Name:

Cornus sericea L.

Plant Characteristics:

Deciduous, thicket forming shrub with arching branches which may easily take root, producing a multi-stem shrub.

Dogwood can reach a height of 2 to 3 m (6 to 10 ft) with a spread of 2 m (6 ft).

Dogwood can live a very long time. This shrub can be cut back to ground level after 10 to 12 years to rejuvenate it. Has a moderate to fast growth rate, from 10 to 45 cm (4 to 18 in.) a year.

Leaves - The leaves are opposite, simple, ovate to lanceolate, 6 to 12 cm (2.5 to 5 in.) long, smooth margins, prominent veins, rounded at base, with pointed tips, dark green above, underside paler with short hairs.

Flowers - Dull greenish white, several in a flat terminal cluster, 3 to 5 cm (1 to 2 in.) across, blooms May to June. If summer is moist may get a second flowering.

Fruit - White drupe, 4 to 5 mm (up to 0.25 in.) across from July to September.

Bark - Stem colour various, mostly blood red, brightest in late winter. The young twigs make it easy to recognize, older bark turns greenish grey after four to five years.

Fall Colour:

Red twigs offer winter colour.

Site Preference:

Dogwood is found on a range of soil moisture conditions from well drained to poorly drained soils. It can withstand flooding during the growing season. It is also found in drier situations along forest margins and it often invades grasslands. Dogwood does best on free draining soils with adequate available moisture. Dogwood has low drought tolerance.

Prefers open sites, grows under light shade.

Is not salt tolerant and has a medium acid tolerance.

Hardiness:

Hardy, but on occasion may suffer winter dieback.

Uses:

Hedge material, specimens and background plantings. Dogwood will produce a thicket, which can be planted alongside of poplar for a field shelterbelt when planted 1 to 2 m (2 to 6 ft) between plants in the row. It has ornamental value, it also provides food and cover for wildlife, including ruff grouse, shelter for mule deer and browse for moose and elk.

Diseases and Insects:

Some galls and leaf spots have been observed. No specific susceptibilities noted. Oyster shell scale can kill the plant.

Pruning:

Dogwood can propagate itself by rootsuckers, stolons or seeds, creating a thick hedge, which can after time, become spindly. Spreading branches should be removed to keep it in bounds.



-  RECOMMENDED
-  SATISFACTORY
-  UNSATISFACTORY



Scientific Name:

Rosa gallica 'Aliko'.

Plant Characteristics:

Introduced from Asia, and naturalized in North America.

Upright shrub with creeping rootstock. Reaching a height at maturity of 2 to 3 m (6 to 10 ft), with a spread of 2 m (6 ft). The shrub has similar flowers to the wild rose of Alberta.

Hedge rose is a very long lived shrub, 25+ years. It can grow at a rate of 10 to 45 cm (4 to 18 in.) a year till maturity.

Leaves - The red stem is usually densely covered with prickles and bristles. Leaflets range from 3 to 5 broad-elliptic or oval, 2 to 6 cm (1 to 2.5 in.) long, leaves are dark green above and paler beneath, with a serrated edge.

Flowers - Solitary pink or crimson from 4 to 7 cm (1.5 to 3 in.) across on a rather long stout pedicel. Flowers in June.

Fruit - Brick red hips in September.

Site Preference:

Hedge rose is adapted to a wide range of soils, it ranges from a moist well drained soil, to a poorly drained soil. It can withstand flooding during the growing season, but prefers a rich loam soil.

Has a moderate drought resistance, the plant will survive while exposed to short periods of low moisture.

It is tolerant of some shade, but prefers full sun.

Hedge rose is quite salt tolerant.

Hardiness:

May winter kill, susceptible to freezing and thawing.

Uses:

Can be planted with poplars as a field shelterbelt. The limited height makes the shelterbelt value of the shrub insignificant. As an ornamental hedge the plant is useful for farmstead beautification. Recommended planting distance in the row is 1 to 1.5 m (3 to 4.5 ft) between plants. The fruit is a rose hip, which is readily eaten by birds. It can also provide protection for wildlife.

Problems:

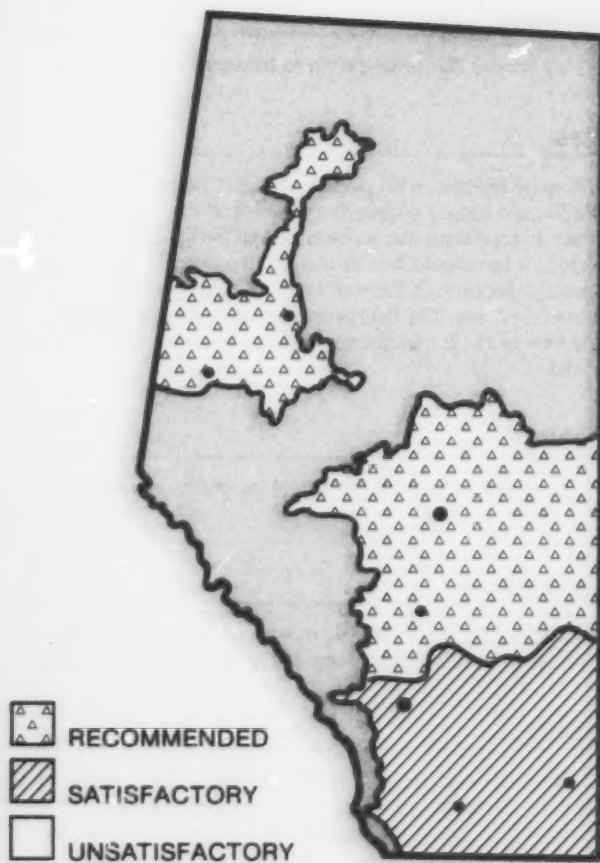
The plant suckers freely, which might be considered a nuisance.

Diseases:

Hedge rose is susceptible to various leaf rusts, leaf spots, powdery, mildew, stem cankers, and crown galls.

Pruning:

Older hedges can readily be rejuvenated by cutting the plant down to ground level. The plant suckers freely, which might be considered a nuisance. Flowers are produced on new wood, so removal of very old wood would increase flowering. Remove wide spreading branches to keep it in bounds.



Scientific Name:

Rosa spinosissima var *altaica* (Willd.) Rehd

Plant Characteristics:

Native in Europe and Western Asia, introduced to North America by early settlers.

Low to medium shrub to 1.5 m (4.5 ft) tall. Medium-fine foliage texture with very densely prickly, spiny branches.

Altai rose is a very long lived shrub, 30+ years. It can grow at a rate of 10 to 45 cm (4 to 18 in.) a year till maturity.

Leaves - Leaflets 5 to 11, circular to oblong-ovate, 1 to 2 cm (0.4 to 0.8 in.) long, edge serrated, but leaf is smooth.

Flowers - Solitary, but usually very numerous on short branchlets. Usually creamy white but also pink, white or yellow, 2 to 5 cm (1 to 2 in.) across. Flowers in June.

Fruit - Rose hip, black or dark brown found in September.

Site Preference:

Will do best in rich loam soil, but is adapted to a range of moist well drained through to poorly drained soils. It can withstand flooding during the growing season.

Altai rose has a moderate drought resistance, the plant will survive while exposed to short periods of low moisture.

Is tolerant of some shading, but prefers full sun.

Altai rose is not very salt tolerant.

Hardiness:

Not completely hardy and is susceptible to freezing and thawing.

Uses:

Can be planted with poplars in a field shelterbelt. The limited height makes the shelterbelt value of the shrub insignificant. As an ornamental hedge the plant is useful for farmstead beautification. Recommended planting distance in the row is 1 to 1.5 m (3 to 4.5 ft) between plants. The fruit is a rose hip, which is readily eaten by birds. It can provide protection for wildlife.

Problems:

Altai rose suckers freely which may be considered a nuisance.

Diseases:

Susceptible to various leaf rusts, leaf spots, powdery mildew, stem cankers, and crown galls.

Pruning:

Older hedges can readily be rejuvenated by cutting plants back to ground level. The plant suckers freely, which might be considered a nuisance, but will make a thick hedge. Roses are sensitive to frost, prune to remove winterkill. Flowers are produced on new wood, so removal of very old wood would encourage flowering. Wide spreading branches should be removed to keep the shelterbelt in bounds.



-  RECOMMENDED
-  SATISFACTORY
-  UNSATISFACTORY



Scientific Name:

Shepherdia argenta (Pursh) Nutt.

Plant Characteristics:

Native to North America, this shrub grows on the prairies from Manitoba to Saskatchewan. Commonly found around sloughs, in coulees, and on light soils on the prairies.

Silver buffaloberry is a large thorny shrub or small tree with multi branches. It reaches a height from 2 to 4 m (6 to 12 ft) with a spread of up to 3.5 m (11 ft). It is an erect shrub with an open structure, suckers freely and forms a dense irregular hedge.

This is a slow growing shrub, that can live 25+ years. It can grow from 10 to 30 cm (9 to 12 in.) a year.

Leaves - Leaves are simple and opposite, small, 5 mm to 2.5 cm (0.25 to 1 in.) long and silvery in colour, edge smooth, elliptic in shape. The leaves and branches have a dense silvery scale when young.

Flowers - Dioecious, yellow flowers are inconspicuous and small brownish clusters at nodes formed in the preceeding season. Flowers are 5 mm (0.25 in.) and bloom in spring.

Fruit - Reddish orange, 3 to 5 mm (to 0.25 in.) in diameter, develop late in August to September. Fruit is very sour, but a hard frost improves taste, very good for jams and jelly.

Bark - Grey and smooth when young, dark and rough when old.

Nitrogen Fixing:

Silver buffaloberry has some capacity for nitrogen fixing.

Site Preference:

Commonly found around sloughs, in coulees, and on light soils. Prefers well drained sites, it is largely confined to medium, textured soil. Although it prefers moist, well drained sites it will tolerate some spring flooding.

Silver buffaloberry is very drought resistant.

Does best in full sun, will not tolerate shade. Good for nutrient poor soils.

Hardiness:

Extremely winter hardy.

Uses:

Accent planting, food for wildlife, reclamation. Can be used in the outside row of farmstead shelterbelts, but also field and roadside belts. The limited height and open structure of this shrub make it of limited use as an effective wind barrier. The fruit is readily eaten by birds. The colour of the foliage gives the value as an ornamental. Fruit will only form if a number of plants are planted together so that male and female plants are present. The shrub is utilized by wildlife for cover and food. The recommended planting distance in a single row is 1 to 1.5 m (3 to 4.5 ft) apart.

Problems:

The irregular growth habit of silver buffaloberry may be considered undesirable.

Pruning:

As required to maintain shape and size. Old, crossing, dead, diseased or weak stems should be removed. Caution thorns.



Scientific Name:

Princepia sinensis (D. Oliver) D.Oliver ex Bean.

Plant Characteristics:

A dense spiny deciduous shrub about 2 m (6 ft) in height at maturity with a spread of about 2 m (6 ft).

Cherry princepia can live 25+ years. It has a slow to moderate growth rate, 10 to 30 cm (4 to 12 in.) a year.

Branches are light grey-brown with spines 6 to 10 mm (0.25 to 0.5 in.) long.

Leaves - The leaves are simple, alternately arranged 5 to 8 cm (2 to 3 in.) long, bright green, narrow shape with smooth edges.

Flowers - Creamy white, 1 to 5 mm (up to 0.25 in.) across, bloom in May to early June.

Fruit - Red cherry like (pit), 1.5 to 2 cm (0.6 to 0.8 in.) across, forms August to September.

A thorny shrub with arching branches, leafs out very early in the spring, a habit which may be considered desirable.

Fall Colour:

Cherry princepia leaves turn yellow in the fall.

Site Preference:

Will be able to thrive on any well drained soils. Prefers a sandy soil. Will grow on moderately alkali soils.

Cherry princepia is drought resistant.

Prefers full sun to partial shade.

Hardiness:

Winter hardy.

Uses:

Cherry princepia is drought resistant and grows easily into a hedge. The plant is useful as a low growing roadside hedge, or as an ornamental. Planting distance between plants in a row is 1 to 1.5 m (3 to 4.5 ft).

Pruning:

Pruning is not often required. Maintenance pruning, removal of broken, crossed, or dead branches.



Scientific Name:

Picea glauca (Moench) Voss

Plant Characteristics:

Native to North America. Found in a variety of soil types and climatic regions and is common throughout south-central and northern region of Alberta. It is rarely found in a pure stand, but mixed with other species.

Dense evergreen with a uniform conical-shaped crown and may reach the height of 20 to 25 m (65 to 80 ft), with a spread up to 6 m (20 ft). The tree has a moderate growth rate.

White spruce is a very long lived tree, 50 to 100 years. It can grow from 30 to 60 cm (12 to 24 in.) a year till maturity.

Leaves - The leaves are needle-shaped, four sided in a cross section, usually less than 19 mm (0.75 in.). Needles are long, straight, stiff, sharply pointed, bluish green, aromatic when crushed. Needles are rather soft and not stiff and prickly.

Cones - Cones are brown, cylindrical in shape, 4 to 5 cm (1.5 to 2 in.) in length, at the ends of twigs, yellow when turning, brown when mature, smooth margins. Cones open about September and drop during winter or spring.

Bark - Scaly, thin, grey to ashy brown.

Site Preference:

White spruce is adapted to well drained, somewhat dry soils through to soils that are poorly drained. It has best growth on well drained silty soils that have adequate available moisture. Can withstand flooding during the growing season, but does not like to stand in water.

White spruce will survive while exposed to short periods of low moisture, but will not perform well on dry sites.

It has a high shade tolerance and can tolerate completely shaded conditions.

Intolerant of saline conditions, but has high acid tolerance.

Hardiness:

Very winter hardy.

Uses:

This is our most valuable evergreen tree for shelterbelt planting. It is most commonly used in multi-row shelterbelts as an inside row. Recommended spacing is 2 to 4 m (6 to 13 ft) between trees in a row and 5 to 8 m (16 to 26 ft) away from adjacent rows. Since spruce cannot compete with faster growing poplars and willows, ample space must be provided between rows. White spruce is also very useful as an ornamental either by itself, or in groupings. The tree provides cover and protection for wildlife. The seeds are used for food by some species and occasionally deer may browse branches.

Problems:

Young seedlings require protection from sun when young, susceptible to sun scald.

Diseases:

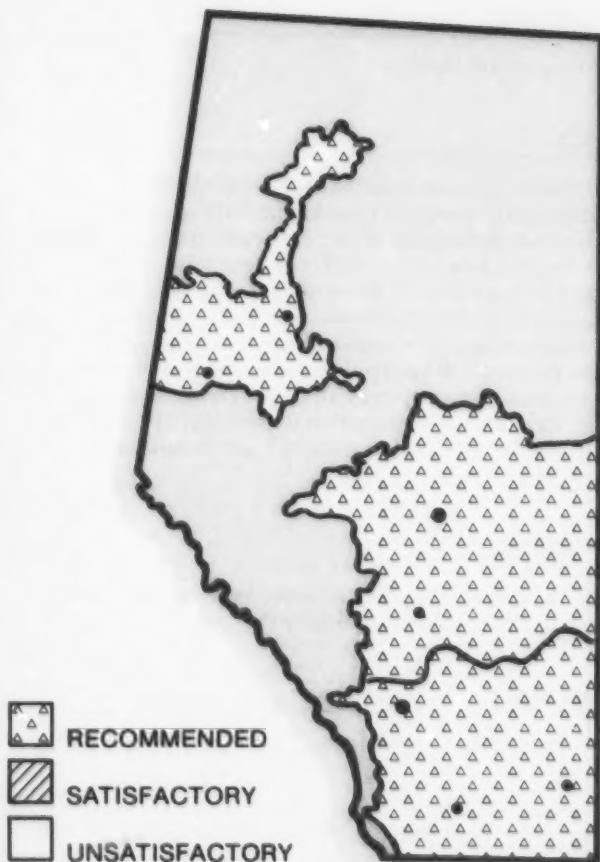
Susceptible to needle rust.

Insects:

Susceptible to spruce sawfly, spruce gall aphid and white pine weevil, pine-needle scale, and occasionally damaged by severe spider-mite infestations.

Pruning:

Pruning is not required, unless it has double leaders, when one should be removed. If no leaders are present a new leader must be trained. With white pine weevil, the growing tip must be removed and burned.



Scientific Name:

Picea pungens Engelm

Plant Characteristics:

Colorado spruce is native to the Rocky Mountains in the Western United States. This is the most widely planted of the spruce.

Colorado spruce has a pyramidal shape. It is a long lived tree from 50 to 100 years. It can reach the height of 25 m (80 ft), with a spread of 6 m (20 ft). Growth rate is slow for the first three to five years after planting but will increase annually. Colorado spruce is a slow growing tree if kept in a shaded location.

Leaves - The branches spread horizontally in whorls. Needles are rigid, 2 to 3 cm (0.75 to 1.25 in.) long, spiny-pointed, grey blue to green, rarely dull green.

Cones - Cones are from 6 to 10 cm (2.5 to 4 in.) long, straw coloured with thin scales, found in the upper branches of the tree. The winged seeds are shed in August and the cones drop during fall and winter. Cones require one year to mature. Needles last for three to four years then turn yellow and fall from the inside of the tree.

Bark - The bark is a platy cinnamon colour. Buds are a brownish yellow.

Site Preference:

Colorado spruce will tolerate a wide range of soils, from clay to a clay loam, and well drained sandy soil. Will not tolerate flooding. Prefers acid soil, will not tolerate medium to high salts.

Will survive while exposed to short periods of low moisture.

Prefers full sun, but can withstand some shade, but will grow slowly in heavy shade.

Hardiness:

Fully winter hardy, growth rate is slow for up to the first five years after planting, but will increase annually from 20 to 60 cm (8 to 24 in.) thereafter. Young seedlings are susceptible to sun scald and should be protected.

Uses:

This is another valuable evergreen tree for shelterbelt planting. It is most commonly used in multiple-row shelterbelts as an inside row, (on the protected side of the belt). Recommended spacing is 2 to 4 m (6 to 13 ft) between trees in a row and 5 to 8 m (17 to 26 ft) away from adjacent rows. Often used in grouping, accent planting. Colorado spruce provides thermal cover in winter, also nesting and roosting cover for small birds. Since the needles are sharp, the branches are browsed only during food shortage.

Problems:

Seedlings require more care for the first three to five years. Prone to sunscald, it does not perform well on unprotected sites.

Insects and Diseases:

Colorado spruce are infrequently damaged by pests. Cytospora canker may attack lower branches as the tree matures. Infestation of red spider mites, and yellowheaded sawfly have been noted, along with spruce gall aphids. They are subject to pine-needle scale.

Pruning:

Pruning is not required, unless there is a double leader, then one should be removed. If a leader is not present, a new leader must be trained. Remove leader if boring insects are present.



Scientific Name:

Picea abies (L.) Karst.

Plant Characteristics:

Native to Northern and Central Europe. Introduced into North America by early settlers.

A medium to large tree that is somewhat loosely branched and often recognized from a distance by the pendent secondary branches. Norway spruce can reach a height of 8 to 20 m (25 to 65 ft), with a spread of 6 m (20 ft). The tree has a tendency to thin out as it becomes old.

Norway spruce is a long lived tree from 50 to 100 years. It can grow from 25 to 50 cm (10 to 20 in.) a year till maturity.

Leaves - The leaves (needles) are 1 to 2.5 cm (0.4 to 1 in.) long, dark green and usually shiny, spirally arranged on branches. The needles are soft, like white spruce.

Cones - Cones are cylindrical, 10 to 15 cm (4 to 6 in.) long, light brown.

Bark - Bark is reddish brown, buds reddish or light brown without resin.

Site Preference:

Norway spruce prefers a rich loam type soil, it will tolerate a wide range of soils, but requires a well drained soil.

The plant will survive while exposed to short periods of low moisture. The plant is not recommended for dryland area unless irrigation is provided.

Prefers full sun to half shade. It can withstand some shading.

Prefers acid soil, will not tolerate medium to high salt levels.

Hardiness:

Not as winter hardy as the rest of our spruce. It experiences winter damage.

Uses:

Norway spruce deserves planting as an ornamental. Can be planted as a farmstead planting. Recommended spacing is 2 to 4 m (6 to 13 ft) between trees in a row and 5 to 8 m (16 to 25 ft), away from adjacent rows. The tree provides cover and protection for wildlife.

Problems:

May experience winter damage. The tree has a tendency to thin out as it becomes old.

Insects:

May have infestation of red spider mites, pine-needle scale, yellowheaded sawfly, and spruce gall aphids.

Pruning:

Pruning is not required, unless a double leader forms, when one must be pruned out. If a leader is not present a new leader must be trained. Remove any branches that have boring insects.



RECOMMENDED
SATISFACTORY
UNSATISFACTORY



Scientific Name:

Pinus contorta var. *latifolia* Engelm. ex S. Wats.

Plant Characteristics:

Lodgepole pine is a tall, slender evergreen with little taper and straight trunk. Lodgepole can reach a height of 12 to 25 m (40 to 80 ft), with a spread of 6 m (20 ft). Branches curve upward.

Lodgepole pine can live from 50 to 100 years, with a growth rate from 30 to 90 cm (12 to 40 in.) a year.

Leaves - Needle-shaped in bundles of 2, 2.5 to 8 cm (1 to 3 in.) long, spirally twisted, stiff, very sharply pointed, yellowish-green, forms dense clusters towards the ends of twigs. Needles generally longer and less twisted than Jack pine.

Cones - Short cylindrical to egg-shaped, curved away from branches, 2 to 5 cm (1 to 2 in.) long, remain on trees for many years. Scales armed with a small prickle.

Bark - Orange-brown in colour, somewhat scaly.

Site Preference:

Lodgepole pine is found on a wide range of soils, from very gravelly sandy to silty clay loam. It achieves its best growth on well drained loamy soils. Generally not tolerant of saline soils.

One of the most drought tolerant of our native conifers. It is often successful on dry, or otherwise severe sites due to its ability to survive where its less tolerant competitor tree succumbs.

Lodgepole pine is tolerant of shade.

Hardiness:

Winter hardy.

Uses:

Pine can be effectively used in a single row shelterbelt with 2 to 4 m (6 to 13 ft) between trees in a row. The tree is also recommended for combined plantings with a row of hedge materials or in a multiple-row shelterbelt, with at least 6 m (20 ft) between pines and adjacent rows of trees. It is also important for wildlife food and shelter.

Diseases:

Susceptible to a variety of rusts and dwarf mistletoe.

Insects:

Susceptible to pine beetles, in even aged mature stands, and lodgepole pine sawfly.

Pruning:

Pruning is not required, unless there is a double leader, prune to retain one only. If a leader is not present, a new leader must be trained. Remove any branches which may contain a boring insect.



Scientific Name:

Pinus sylvestris L.

Plant Characteristics:

Scots pine is native to Europe and Russia. Wide range of locations through Alberta. Introduced in America by early settlers.

A medium large tree, typically pyramidal when young, becoming more rounded and open with age. Plantings are often easily recognized because of the distinctive copper-orange bark of the upper trunk and large branches of a mature tree. Bark peels.

Scots pine can live from 50 to 100 years, with a growth rate of 30 to 90 cm (12 to 40 in.) a year.

Scots pine may reach a height of 25 m (80 ft) with a spread of 6 m (20 ft). Scots pine is a relatively fast growing tree.

Leaves - Needle-shaped, in bundles of 2, 3 to 7 cm (1 to 3 in.) long, twisted or spiralled, blue green in colour, abruptly pointed.

Cones - Short stalked, 3 to 7 cm (1 to 3 in.) long, roundish in shape, dull tawny yellow. Winged seeds are produced, and released before cones drop to the ground. Cones take two years to mature.

Site Preference:

It is well adapted to dry sites, particularly sandy soils, but can be found on a wide range of soil types. Generally not tolerant of saline soils.

Scots pine can survive drought conditions. It has a wide range of moisture requirements.

Prefers full sun, intolerant to shade.

Hardiness:

Northern strains of Scots pine are winter hardy, but others have a tendency to winter brown.

Uses:

Usually used as an inside row of a farmstead belt where it can be protected by the outer deciduous row. In a shelterbelt they can be planted 2 to 4 m (6 to 13 ft) between plants in the row, and 5 to 8 m (17 to 26 ft) away from other rows. In addition it is often used as a specimen tree in protected sites. The tree is of limited value for wildlife, although it does provide thermal cover in winter. Younger trees may be browsed by white-tail and mule deer.

Problems:

Small rodents, such as porcupines, like Scots pine.

Insects and Diseases:

Pine-needle scale may occasionally be severe in some areas. The pine bark beetles occasionally infest pines in the southwest area of the province.

Pruning:

Pruning is not required, unless you have a double leader. If a leader is not present, a leader will have to be trained.



-  RECOMMENDED
 SATISFACTORY
 UNSATISFACTORY



Scientific Name:

Larix sibirica Ledeb.

Plant Characteristics:

Native to eastern Russia, Siberia and Northern China.

A medium to tall size deciduous tree, with a straight, gradually tapering trunk and narrow open crown of many irregularly arranged, slender somewhat horizontal branches.

Larch can reach a height of 15 to 20 m (50 to 65 ft), with a spread of up to 7.5 m (25 ft).

It can live up to 100 years with a growth rate of up to 20 to 150 cm (8 to 60 in.) a year.

Leaves - The leaves (needles) appear on the trees in two different kinds of twigs. Towards the ends of the branches and branchlets, the twigs elongate in the regular way and they bear single leaves distinctly separated from each other. Further back on branches, many of the leaves crowd so closely that they appear to be in clusters.

The leaves of the larch are spirally arranged, needle-shaped, slender, flexible and soft to touch, 20 mm to 45 mm (0.75 to 1.75 in.) long, the numbers in the cluster varies from 10 to 50. They differ from all other conifers in not retaining their foliage over the winter.

Cones - Short and round and are borne on the dwarf twigs, stand erect on short stalks and open when mature to release the winged seeds. Cones are formed and mature in one season. Cones are brown.

Bark - Scaly, resembling that of a spruce tree, but the inner bark of larch is a vivid reddish purple.

Fall Colour:

Needles turn yellow in fall before dropping off.

Site Preference:

It is also found on a wide range of soil textures. It produces the best on moist, light, well-drained soils. It will adapt itself to dry conditions.

Fair tolerance to drought.

Has very low shade tolerance; it requires well lighted situations and is rarely found in pure stands.

Not generally found on saline soils, but has a high tolerance to acid soils.

Hardiness:

Larch is fully winter hardy.

Uses:

Rodents will eat young plants and seed may be eaten by birds and small mammals.

Larch makes a good field windbreak because it loses its foliage during the winter. The wide spreading branches make this species very suitable for accent plantings, particularly because of its foliage colour in fall. For field windbreaks it can be planted 2 to 4 m (6 to 13 ft) between trees in a row.

Problems:

Can be difficult to start or to transplant. Survival has been much greater since trees have become available as container grown stock.

Diseases:

Susceptible to needle cast, needle rusts, "Amillaria root rot" and white pocket rot.

Insects:

Larch sawfly can defoliate the trees.

Pruning:

Pruning is not required, unless there is a double leader, then one must be removed. If there are no leaders present, a new leader must be trained.

VARIETY	HEIGHT (metres)	USEFUL LIFE (years)	GROWTH RATE (cm/yr)	SPACING	# BUNDLES per mile 500m		COMMENTS
Northwest Poplar	10-25	15-30	50-200	3m/10ft	21	7	Gall mites in south
Brooks #6 Poplar	10-25	15-30	50-200	3m/10ft	21	7	Not drought tolerant
Griffin Poplar	6-15	10-20	30-150	3m/10ft	21	7	Cankers in moist areas
Cottonwood Poplar	12-15	100+	30-150	3m/10ft	21	7	Likes moisture
Laurel Leaf Willow	8-15	25-60	50-200	3m/10ft	21	7	Likes moisture
Acute Leaf Willow	8-15	25-60	50-200	3m/10ft	21	7	Likes moisture
Golden Willow	7-12	25-60	50-150	3m/10ft	21	7	Likes moisture
Peach Leaf Willow	5-8	25-60	15-100	3m/10ft	21	7	Likes moisture
Manitoba Maple	7-12	25-60	10-60	3m/10ft	21	7	Brittle wood
Green Ash	12-20	50-90	10-60	2m/6ft	35	10	
Bur Oak	10-14	100+	5-30	3m/10ft	21	7	Large seed
White Birch	6-12	15-50	10-45	2m/6ft	35	10	Likes moisture
Mayday	5-10	12-50	15-60	2m/6ft	35	10	White blooms
Chokecherry	4-8	renovate	10-50	2m/6ft	35	10	
Russian Olive	6-12	10-20	10-30	2m/6ft	35	10	
Sea Buckthorn	4-6	renovate	10-20	1.5m/4.5ft	42	14	Orange fruit
Red Elder	3-4	renovate	15-30	1.5m/4.5ft	42	14	
Caragana	3-5	50+	15-45	0.5m/1.5ft	140	40	Best in drier areas
Villosa Lilac	3-5	50+	5-30	1m/3ft	70	20	Few suckers
Common Lilac	3-4	50+	5-30	1m/3ft	70	20	Many suckers
Honeysuckle	2-3	30+	10-30	1m/3ft	70	20	Severe aphid problems
Hedge Rose	2-3	25+	10-45	1m/3ft	70	20	
Altaica Rose	2-3	25+	10-45	1m/3ft	70	20	
Silver Buffaloberry	2-3	25+	10-30	1.5m/4.5ft	42	14	
Cherry Princepia	2-4	25+	10-30	1.5m/4.5ft	42	14	Large seed
Dogwood	2-3	rejuvenate	10-45	1m/3ft	70	20	Best in moister areas
White Spruce	10-20	50-100	30-60	3m/10ft	53	17	Not good in hot areas
Colorado Spruce	10-25	50-100	30-60	3m/10ft	53	17	
Norway Spruce	8-20	50-100	25-50	3m/10ft	53	17	Not good in hot areas
Lodgepole Pine	12-25	50-100	30-90	3m/10ft	53	17	Not good in hot areas
Scots Pine	12-25	50-100	30-90	3m/10ft	53	17	
Siberian Larch	10-15	up to 100	20-150	3m/10ft	53	17	Likes good drainage

Height at maturity, useful life, and growth rate depend upon moisture conditions, cleanliness, location and exposure - the smaller numbers are the height, useful age, and growth rate that could be expected in FAIR growing conditions.

Acuminate - gradually tapering to a point.

Alternate - not opposite each other.

Coniferous - cone bearing.

Cuneate - wedge shaped.

Deciduous - having leaves that fall off in autumn.

Deltoid - of a leaf, triangular.

Drupe - a fleshy fruit with a single hard seed.

Diocious - male and female flowers on separate plants.

Elliptic - oval or oblong with the ends rounded and widest in the middle.

Glabrous - smooth, without hairs.

Internode - the part of the stem between two nodes.

Lanceolate - much longer than wide, widening above the base and tapering to the tip.

Linear - long and narrow with parallel margins.

Monoecious - male and female flowers separately on the same plant.

Node - the place on a stem where leaves grow.

Nutlet - a small nut.

Obovate - egg shaped, having the widest part near the tip.

Opposite - borne two at a node, opposite sides of a stem.

Ovate - egg shaped.

Pinnate - leaflets arranged on each side of a common stalk.

Pubescent - covered with hairs.

Samara - a winged fruit that does not split open at maturity.

Serrate - having sharp teeth pointing forward.

Serrulate - finely toothed.

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